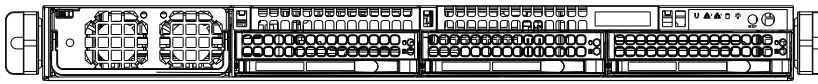
SUPERO®

A+ SERVER 1042G-TF



USER'S MANUAL

Revision 1.0c

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the A+ SERVER 1042G-TF. Installation and maintenance should be performed by experienced technicians only.

The A+ SERVER 1042G-TF is a 1U rackmount server based on the SC818TS-1400LPBP server chassis and the Super H8QGi+-F serverboards.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the Super H8QGi+-F serverboard and the SC818TS-1400LPBP chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the A+ SERVER 1042G-TF into a rack and check out the server configuration prior to powering up the system. If your server was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the A+ SERVER 1042G-TF.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the H8QGi+-F serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC818TS-1400LPBP 1U rackmount server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

Notes

Table of Contents

Chapter 1 Introduction

1-1 Overview 1-1
1-2 Serverboard Features 1-2
Processors 1-2
Memory 1-2
Serial ATA 1-2
PCI Expansion Slots 1-2
Ethernet Ports 1-2
Onboard Controllers/Ports 1-2
Graphics Controller 1-3
Other Features 1-3
1-3 Server Chassis Features 1-4
System Power 1-4
SATA Subsystem 1-4
Front Control Panel 1-4
Cooling System 1-4
1-4 Contacting Supermicro 1-5

Chapter 2 Server Installation

2-1 Overview 2-1
2-2 Unpacking the System 2-1
2-3 Preparing for Setup 2-1
Choosing a Setup Location 2-1
Rack Precautions 2-2
Server Precautions 2-2
Rack Mounting Considerations 2-3
Ambient Operating Temperature 2-3
Reduced Airflow 2-3
Mechanical Loading 2-3
Circuit Overloading 2-3
Reliable Ground 2-3
2-4 Installing the System into a Rack 2-4
Identifying the Sections of the Rack Rails 2-4
Installing the Inner Rail Extensions 2-5
Assembling the Outer Rails 2-6
Installing the Outer Rails onto the Rack 2-7
Installing the Server into a Telco Rack 2-9

2-5 Checking the Serverboard Setup 2-10
2-6 Checking the Drive Bay Setup 2-11

Chapter 3 System Interface

3-1 Overview 3-1
3-2 Control Panel Buttons 3-1
Reset 3-1
Power 3-1
3-3 Control Panel LEDs 3-2
NIC2 3-2
NIC1 3-2
HDD 3-2
Power 3-2
3-4 SATA Drive Carrier LEDs 3-3

Chapter 4 System Safety

4-1 Electrical Safety Precautions 4-1
4-2 General Safety Precautions 4-2
4-3 ESD Precautions 4-3
4-4 Operating Precautions 4-4

Chapter 5 Advanced Serverboard Setup

5-1 Handling the Serverboard 5-1
Precautions 5-1
Unpacking 5-2
5-2 I/O Port and Control Panel Connections 5-2
Front Control Panel 5-3
5-3 Processor and Heatsink Installation 5-3
Installing a Passive CPU Heatsink 5-6
Removing the Heatsink 5-6
5-4 Installing Memory 5-7
DIMM Module Population Configuration 5-9
5-5 PCI Expansion Cards 5-10
5-6 Serverboard Details 5-11
H8QGi+-F Quick Reference 5-12
5-7 Connector Definitions 5-13
5-8 Jumper Settings 5-19
Explanation of Jumpers 5-19
5-9 Onboard Indicators 5-21
5-10 SAS and SATA Drive Connections 5-22
5-11 Enabling SATA RAID 5-23

Serial ATA (SATA) 5-23
Installing the OS/SATA Driver 5-23
Building a Driver Diskette 5-23
Enabling SATA RAID in the BIOS 5-24
Using the Adaptec RAID Utility 5-25
Installing the RAID Driver During OS Installation 5-25
5-12 Installing Drivers 5-26
Supero Doctor III 5-27

Chapter 6 Advanced Chassis Setup

6-1 Static-Sensitive Devices 6-1
Precautions 6-1
6-2 Control Panel 6-2
6-3 System Cooling 6-2
System Fan Failure 6-3
6-4 Drive Bay Installation/Removal 6-4
Accessing the Drive Bays 6-4
Peripheral Drive Installation 6-7
6-5 Installing the Air Shroud 6-8
Checking the Air Flow 6-8
6-6 Power Supply 6-10
Power Supply Failure 6-10

Chapter 7 BIOS

7-1 Introduction 7-1
7-2 Main Menu 7-2
7-3 Advanced Settings Menu 7-2
7-4 Security Settings Menu 7-12
7-5 Boot Settings Menu 7-13
7-6 Exit Menu 7-14

Appendix A BIOS Error Beep Codes

Appendix B Installing Windows

B-1 Installing the Windows OS for a RAID System B-1
B-2 Installing the Windows OS for a Non-RAID System B-2

Appendix C System Specifications

Chapter 1

Introduction

1-1 Overview

The A+ SERVER 1042G-TF is a 1U server comprised of the SC818TS-1400LPBP chassis and one H8QGi+-F serverboards. Please refer to our web site for information on operating systems that have been certified for use with the server (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components may have been included with the system, as listed below.

- One (1) mini-SATA to USB adapter for slim DVD (CDM-USATA-G-O-P)
- One (1) slim SATA DVD kit (MCP-220-81502-0N)
- Four (4) 1U passive CPU heatsinks for AMD Socket G34 (SNK-P0042P)
- Six 4-cm counter-rotating fans (FAN-0111L4)
- SATA Accessories:
  Three (3) hard drive carriers (MCP-220-00001-01)
  One (1) internal HDD backplane (BPN-SAS-818TQ)
  One (1) 40-cm 8pin to 8pin ribbon cable with tube SGPIO cable (CBL-0157L)
  Three (3) 48CM SATA round cable sets (CBL-0206L)
  One (1) 70-cm, internal USB cable for slim USB DVD-ROM (CBL-0341L)
- One (1) PCI Express x16 riser card (RSC-RR1U-E16)
- Rackmount kit (MCP-290-00062-0N)
- One CD containing drivers and utilities

1-2 Serverboard Features

At the heart of the A+ SERVER 1042G-TF is one H8QGi+-F quad processor serverboard, which is based on the AMD SR5690/SP5100 chipset.

Below are the main features of the serverboards.

Processors

The H8QGi+-F supports four AMD Opteron 6100 series (Socket G34 type) processors. Please refer to our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The H8QGi+-F has thirty-two (32) single/dual/tri/quad channel DIMM slots supporting up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/non-ECC SDRAM.. See Chapter 5 Section 6 for more details on installing memory into the system.

Serial ATA

The South Bridge (ICH10R) of the chipset includes a Serial ATA controller for six Gb/s SATA drives. The hot-swappable SATA drives are connected to a backplane that provides power, bus termination and configuration settings. RAID 0, 1, and 10 are supported. Refer to the support area of our web site for procedures on setting up RAID on your system.

PCI Expansion Slots

The H8QGi+-F board has one PCI Express 2.0 x16 slot.

Ethernet Ports

An Intel® network controller is integrated into each of the serverboards to support two Gigabit LAN ports (100/1000Base-T/1000BaseTX, RJ45 output).

Onboard Controllers/Ports

Onboard I/O backpanel ports on the serverboard include one COM port, a VGA port, two USB ports, a dedicated IPMI LAN port and two Gigabit LAN (NIC) ports.

Graphics Controller

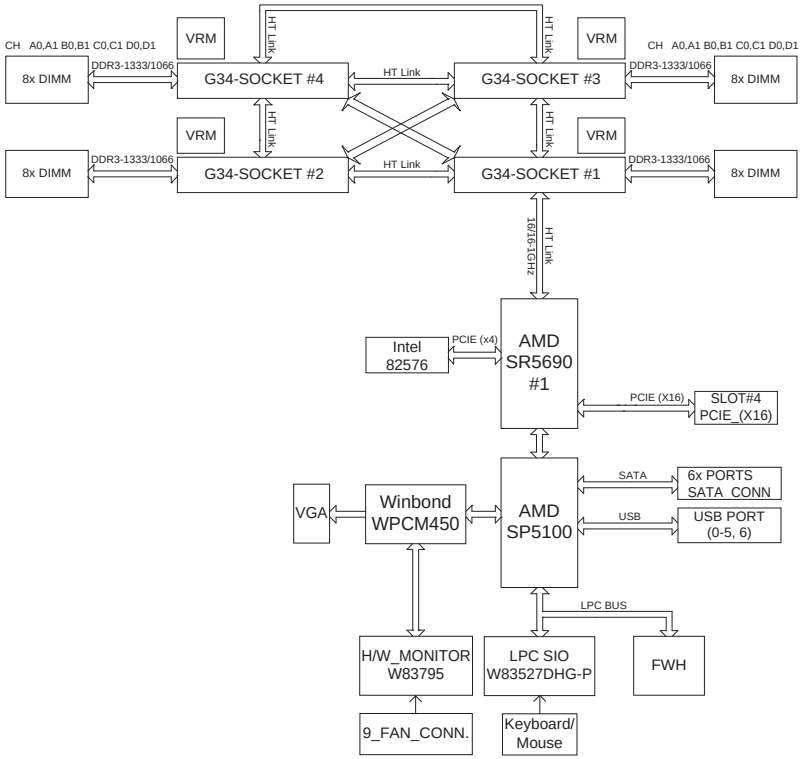
The H8QGi+-F features an integrated Matrox G200eW graphics chip, which includes 16 MB of DDR2 memory.

Other Features

Other onboard features that promote system health include voltage monitors, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

Figure 1-1. AMD SR5690/SP5100 Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-3 Server Chassis Features

System Power

The SC818TS-1400LPBP features a Gold Level 1400W high-efficiency power supply. The AC power cord should be removed from the system before servicing or replacing the power supply. See Chapter 6 for details.

SATA Subsystem

The SC818TS-1400LPBP chassis includes three 3.5" drive bays, which may be used to house hot-swappable SATA drives. RAID 0 and 1 are supported.

Front Control Panel

The control panel provides a system monitoring and control interface. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included.

Cooling System

The SC818TS-1400LPBP has an innovative cooling design that includes four 4-cm counter-rotating PWM (Pulse Width Modulated) fans located in the middle section of the chassis. The power supply module also includes a cooling fan. All chassis and power supply fans operate continuously. An air shroud channels the airflow from the system fans to efficiently cool the processors and memory. See note on the following page regarding fan control.

1-4 Contacting Supermicro

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Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	886-2-8228-1366, ext.132 or 139

Notes

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your A+ SERVER up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the system was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the server was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

- This product is not suitable for use with visual display work place devices acccording to §2 of the the German Ordinance for Work with Visual Display Units.

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.
- Rack-mounted equipment should not be used as a shelf or work space.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SATA drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

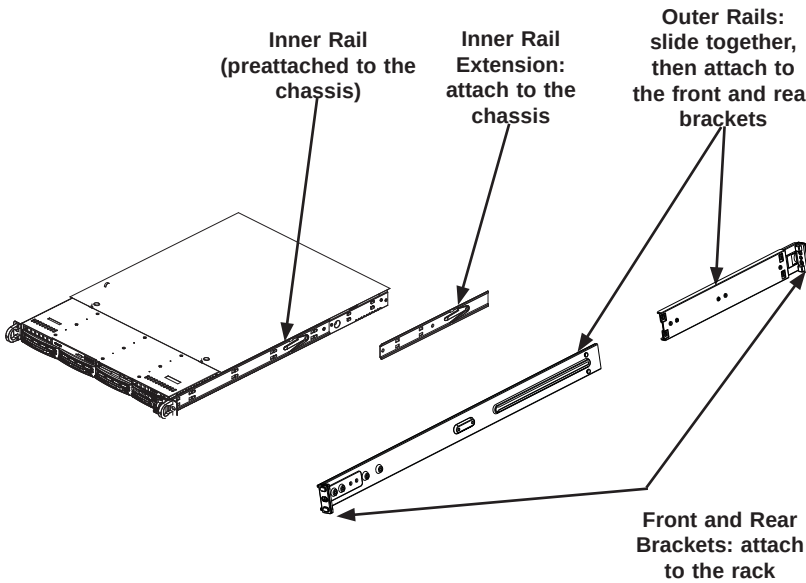
This section provides information on installing the SC818TS chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 26" and 33.5" deep.

Identifying the Sections of the Rack Rails

The chassis package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Figure 2-1. Identifying the Sections of the Rack Rails


Inner Rail (preattached to the chassis)
Inner Rail Extension: attach to the chassis
Outer Rails: slide together, then attach to the front and rear brackets
Front and Rear Brackets: attach to the rack

Installing the Inner Rail Extensions

The SC818TS chassis includes a set of inner rack rails in two sections: inner rails (A) and inner rail extensions (B). The inner rails are preattached and do not interfere with normal use of the chassis if you decide not to install to a server rack. Attaching the inner rail extensions to to the inner rails stabilizes the chassis within the rack.

Installing the Inner Rail Extensions

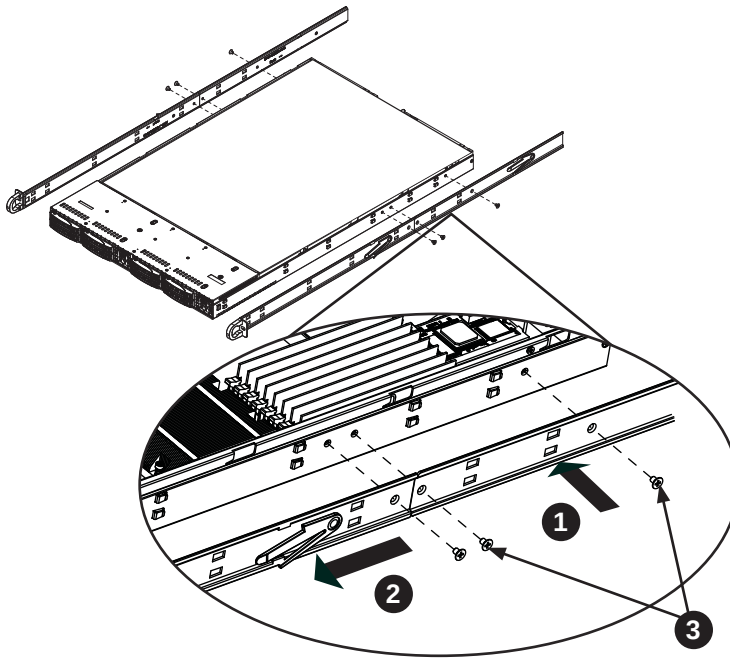
1. Place the inner rail extensions (B) over the preattached inner rails (A) which are attached to the side of the chassis. Align the hooks of the inner rail with the rail extension holes. Make sure the extension faces "outward" just like the inner rail.

2. Slide the extension toward the front of the chassis.

3. Secure the chassis with screws as illustrated.

4. Repeat steps 1-3 for the other inner rail extension.

Figure 2-2. Installing the Inner Rails



Assembling the Outer Rails

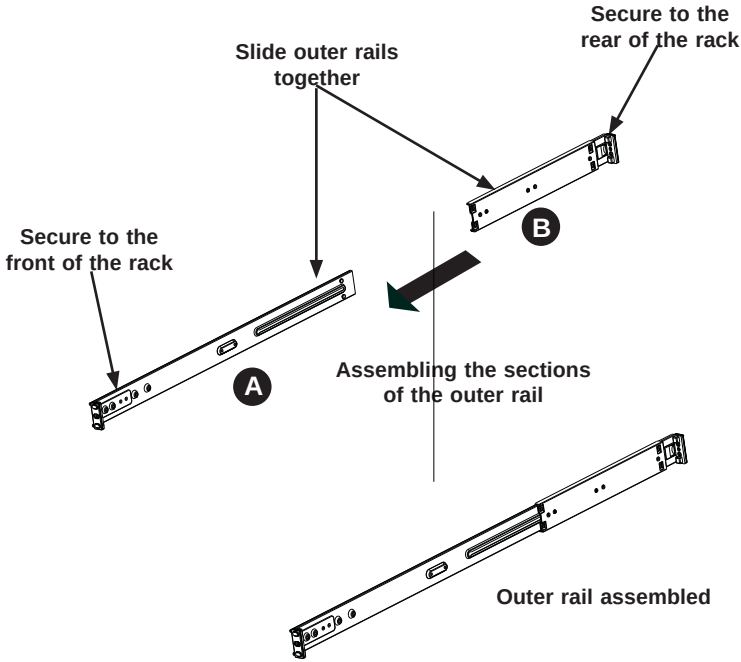
Each outer rail is in two sections that must be assembled before mounting on to the rack.

Assembling the Outer Rails

1. Identify the left and right outer rails by examining the ends, which bend outward.

2. Slide the front section of the outer rail (A), into the rear section of the outer rail (B).

Figure 2-3. Assembling the Outer Rails


Secure to the rear of the rack
Slide outer rails together
B
Secure to the front of the rack
A
Assembling the sections of the outer rail
Outer rail assembled

Installing the Outer Rails onto the Rack

Outer Rail Installation

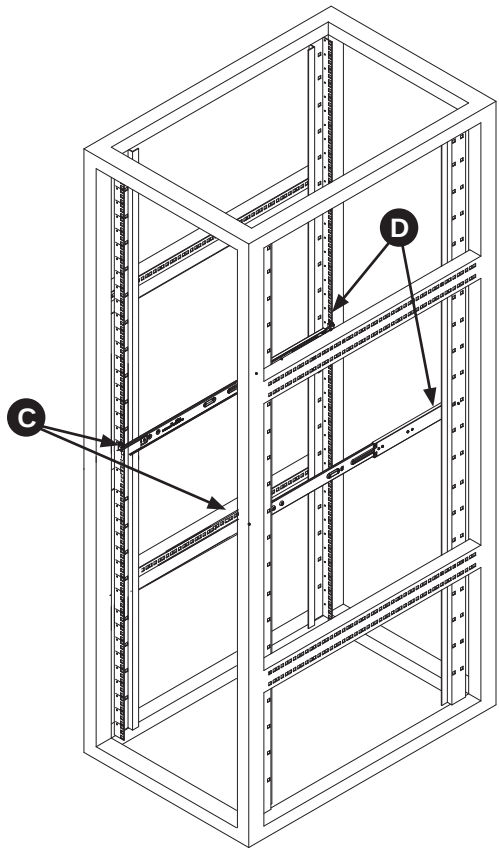
1. Adjust the outer rails to the proper length so that the outer rail fits snugly within the rack.

2. Align the holes on the front of the outer rail, with the holes on the front of the rack (C) and secure with the screws provided.

3. Align the holes on the rear of the outer rail to the holes on the rack (D) and secure with the screws provided.

4. Repeat the procedure with the second outer rail assembly.

Figure 2-4. Installing the Outer Rails to the Rack



Installing the Chassis into a Rack (Figure 2-5)

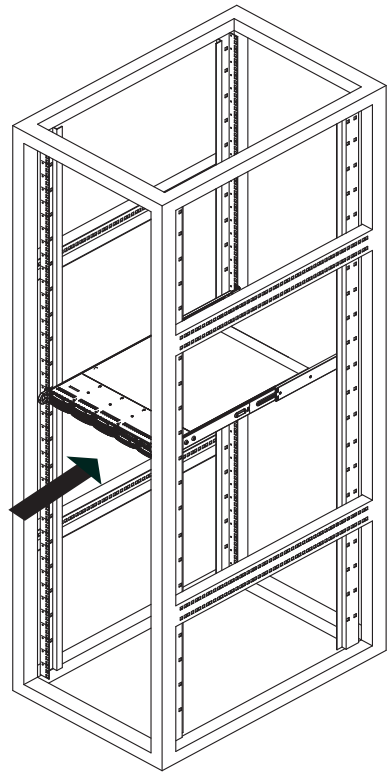
1. Confirm that chassis includes the inner rails and rail extensions . Also, confirm that the outer rails are installed on the rack.

2. Line chassis rails with the front of the rack rails.

3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs "click".

4. (Optional) Insert and tightening the thumbscrews that hold the front of the server to the rack.

Figure 2-5. Installing the Server into a Rack

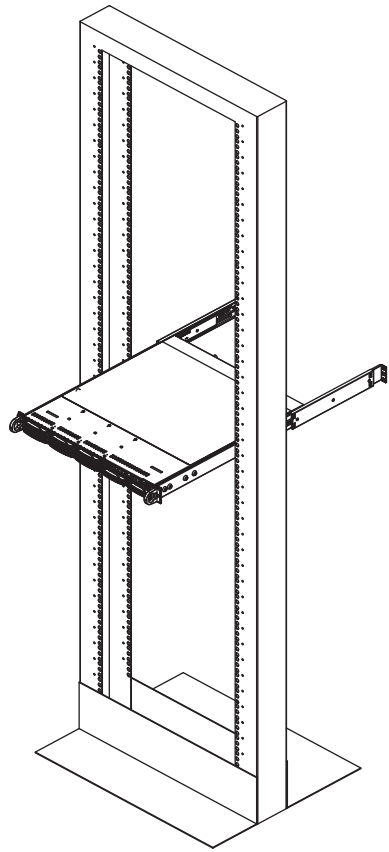


Installing the Server into a Telco Rack

Optional brackets (p/n MCP-290-00016-0N) are needed to install the server to a telco (open type) rack.

To install the server into a Telco type rack, use the two L-shaped brackets on either side of the chassis (four total). First, determine how far follow the server will extend out the front of the rack. Larger chassis should be positioned to balance the weight between front and back. If a bezel is included on your server, remove it. Then attach the two front brackets to each side of the chassis, then the two rear brackets positioned with just enough space to accommodate the width of the telco rack. Finish by sliding the chassis into the rack and tightening the brackets to the rack.

Figure 2-6. Installing the Server into a Telco Rack



2-5 Checking the Serverboard Setup

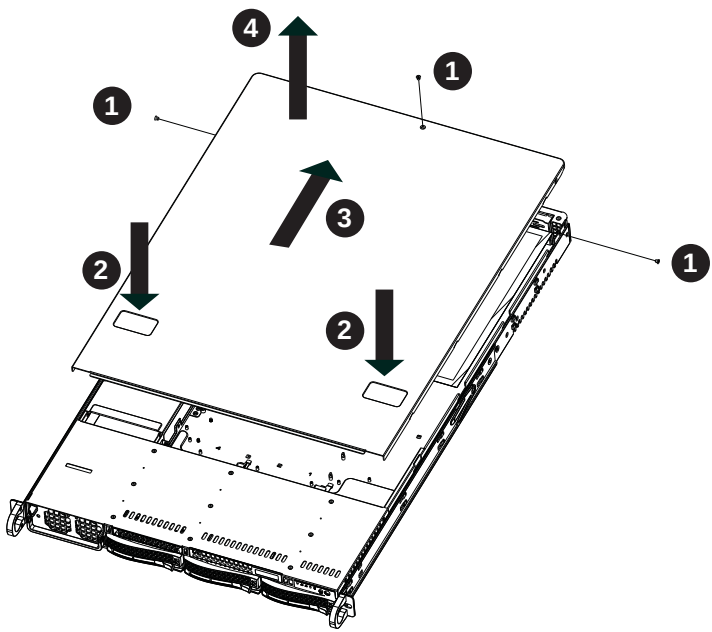
After you install the server in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

Removing the Chassis Cover (Figure 2-7)

1. Remove the three screws securing the top cover to the chassis.
2. Press both of the release tabs at the same time to release the cover
3. Slide the cover toward the rear of the chassis.
4. Lift the cover up and off of the chassis.

Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

Figure 2-7: Removing the Chassis Cover



Checking the Components

1. You may have processors already installed to the serverboard. Each processor needs its own heatsink. See Chapter 5 for instructions on processor and heatsink installation.

2. Your server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.

4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. See Chapter 5 for details on cable connections. Also, check the air seals for damage. The air seals are located under the blower fan and beneath the frame cross section that separates the drive bay area from the serverboard area of the chassis.

2-6 Checking the Drive Bay Setup

Next, you should check to make sure the hard drives have been properly installed and all connections have been made.

Checking the Drives

1. You can add or remove hard drives from the drive carriers without having to remove the top chassis cover.

2. If you need to remove or install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by 4-cm counter-rotating fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.

2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

1. The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

2. Finish by depressing the power button on the chassis control panel.

Chapter 3

System Interface

3-1 Overview

There are several LEDs on the control panel as well as others on the drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel and an on/off switch on the power supply. This chapter explains the meanings of all LED indicators and the appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis: a reset button and a power on/off button.

RESET

Reset

Use the reset button to reboot the system.

Power

The main power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the SC818GTQ chassis has five LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

NIC2

Indicates network activity on LAN2 when flashing .

NIC1

Indicates network activity on LAN1 when flashing .

HDD

This light indicates SATA and/or DVD-ROM drive activity when flashing.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SATA Drive Carrier LEDs

- **Green:** Each Serial ATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed. Please refer to Chapter 6 for instructions on replacing failed SATA drives.

- **Red:** The red LED to indicate an SATA drive failure. If one of the SATA drives fail, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SATA drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the A+ SERVER 1042G-TF from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the operating system first and then unplug the power cords. The unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard CR2032 battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the 1042G-TF clean and free of clutter.

- The 1042G-TF weighs approximately 47 lbs. (21.4 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

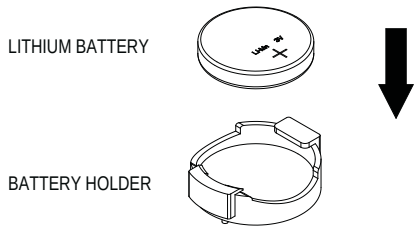
- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 1042G-TF is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard CR2032 Battery



Please handle used CR2032 batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the H8QGi+-F serverboard into the SC818TS-1400LPBP chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the H8QGi+-F serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

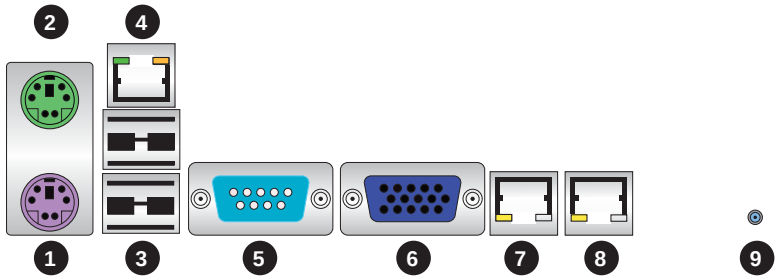
Unpacking

The serverboard is shipped in antistatic packaging to avoid electrostatic discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 I/O Port and Control Panel Connections

The I/O ports are color coded in conformance with the PC99 specification to make setting up your system easier. See Figure 2-2 below for the colors and locations of the various I/O ports.

Figure 5-1. I/O Port Locations and Definitions

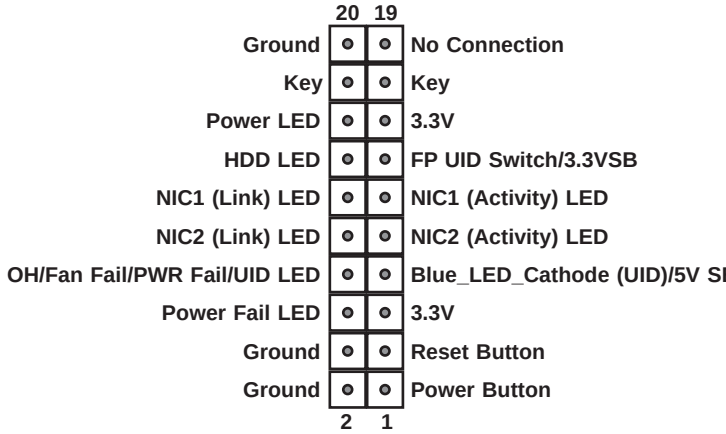


Rear I/O Ports	
1. Keyboard	6. VGA Port
2. PS/2 Mouse	7. LAN1
3. USB0/1	8. LAN2
4. IPMI LAN	9. UID
5. COM1	

Front Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 2-3 for the pin definitions of the various connectors. Refer to Section 2-6 for details.

Figure 2-3. JF1: Front Control Panel Header (JF1)



5-3 Processor and Heatsink Installation

Warning: When handling the processor, avoid placing direct pressure on the label area of the fan. Also, do not place the serverboard on a conductive surface, which can damage the BIOS battery and prevent the system from booting up.

Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing the Processors

1. Begin by removing the cover plate that protects the CPU. Lift the lever on the CPU socket until it points straight up.

2. With the lever raised, lift open the silver CPU retention plate.

3. Use your thumb and your index finger to hold the CPU. Locate and align pin 1 of the CPU socket with pin 1 of the CPU. Both are marked with a triangle.

4. Align pin 1 of the CPU with pin 1 of the socket. Once aligned, carefully place the CPU into the socket. *Do not drop the CPU on the socket, move the CPU horizontally or vertically or rub the CPU against the socket or against any pins of the socket, which may damage the CPU and/or the socket*.

5. With the CPU inserted into the socket, inspect the four corners of the CPU to make sure that it is properly installed and flush with the socket. Then, gently lower the silver CPU retention plate into place.

6. Carefully press the CPU socket lever down until it locks into its retention tab. For a dual-CPU system, repeat these steps to install another CPU into the CPU#2 socket (and into CPU#2, #3 and #4 sockets for a quad-CPU configuration).

Note: in single and dual-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPU(s). Memory is limited to a maximum of 32 GB for a single CPU and 64 GB for dual CPU configurations.

Installing a Passive CPU Heatsink

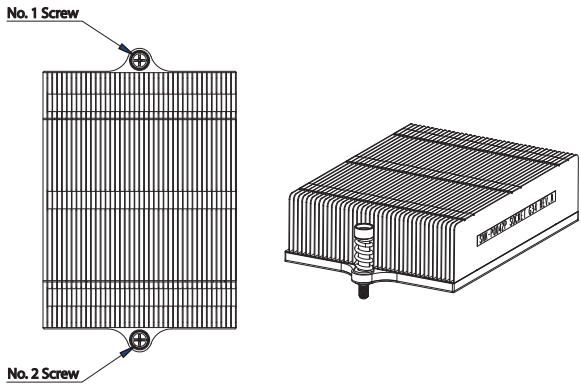
1. Do not apply any thermal grease to the heatsink or the CPU die -- the required amount has already been applied.

2. Place the heatsink directly on top of the CPU so that the heat sink screws are aligned with the mounting holes on the back plate.

3. Make sure the screwdriver torgue setting is no more than 5.0 Kgf-cm (4.3 lbf-in) and keep the heat sink direction vertical.

4. Tighten each screw a few turns at a time while alternating between the two until fully tightened.

Figure 5-3. SNK-0042P Heatsink



Removing the Heatsink

Warning: We do not recommend removing the CPU or the heatsink. However, if you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

1. Unscrew the heatsink screws from the motherboard a few turns at a time, alternating between the two until the screws can be removed.

2. Gently wriggle the heatsink to loosen it from the CPU. (Do not use excessive force when wriggling the heatsink!)

3. Once the CPU is loose, remove the it from the CPU socket.

4. Clean the surface of the CPU and the heatsink, removing the used thermal grease. Reapply the proper amount of thermal grease on the surface before re-installing the CPU and the heatsink.

5-4 Installing Memory

Caution! Exercise extreme caution when installing or removing memory modules to prevent any possible damage.

Memory Support

The H8QG6/i+-F serverboard supports single/dual/tri/quad-channel, DDR3-1333/1066/800 registered ECC/Unbuffered ECC/non-ECC SDRAM. Only interleaved memory is supported, so you must populate four DIMM slots at a time (see procedure below).

Populating four adjacent slots at a time with memory modules of the same size and type will result in interleaved (128-bit) memory, which is faster than non-interleaved (64-bit) memory.

Maximum Memory

The H8QG6/i+-F serverboard supports up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/non-ECC SDRAM.

Installing Memory

1. Insert each memory module vertically into its slot, paying attention to the notch along the bottom of the module to prevent inserting the module incorrectly (see Figure 2-1).

2. Install to slots CPU1/DIMM1A, CPU1/DIMM2A, CPU1/DIMM3A and CPU1/DIMM4A, etc. Always install in groups of four and in the numerical order of the DIMM slots. See support information below.

3. Gently press down on the memory module until it snaps into place.

4. With four CPUs installed, repeat step 2 to populate the CPU2 DIMM slots. Always install four DIMMs to both CPU DIMM slots for more efficient operation.

Note: 1 GB, 2 GB, 4 GB, 8 GB and 16 GB memory modules are supported. It is highly recommended that you remove the power cord from the system before installing or changing memory modules. Please refer to our web site for memory that has been tested on the H8QG6/i+-F serverboard.

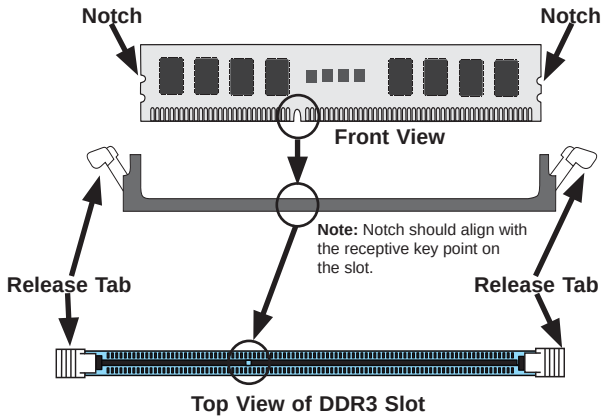
Maximum Memory

The H8QG6/i+-F serverboard supports up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/non-ECC SDRAM.

Figure 5-4. DIMM Installation

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove: Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.



Memory Population for Optimal Performance -For a Motherboard with One CPU (CPU1) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
4 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
8 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B

Memory Population for Optimal Performance -For a Motherboard with Two CPUs (CPU1 & CPU2) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
8 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
	CPU2	P2-1A		P2-2A		P2-3A		P2-4A	
16 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B
	CPU2	P2-1A	P2-1B	P2-2A	P2-2B	P2-3A	P2-3B	P2-4A	P2-4B

Memory Population for Optimal Performance – For a Motherboard with Four CPUs (CPU1, CPU2, CPU3 & CPU4) Installed									
# DIMMS	**CPU**	**Channel 1**		**Channel 2**		**Channel 3**		**Channel 4**	
16 DIMMs	CPU1	P1-1A		P1-2A		P1-3A		P1-4A	
	CPU2	P2-1A		P2-2A		P2-3A		P2-4A	
	CPU3	P3-1A		P3-2A		P3-3A		P3-4A	
	CPU4	P4-1A		P4-2A		P4-3A		P4-4A	
32 DIMMs	CPU1	P1-1A	P1-1B	P1-2A	P1-2B	P1-3A	P1-3B	P1-4A	P1-4B
	CPU2	P2-1A	P2-1B	P2-2A	P2-2B	P2-3A	P2-3B	P2-4A	P2-4B
	CPU3	P3-1A	P3-1B	P3-2A	P3-2B	P3-3A	P3-3B	P3-4A	P3-4B
	CPU4	P4-1A	P4-1B	P4-2A	P4-2B	P4-3A	P4-3B	P4-4A	P4-4B

DIMM Module Population Configuration

For memory to work properly, follow the tables below for memory installation:

Per Channel DIMM Populations Options					
DIMM Type	**DIMM A**	**DIMM B**	**Max. MHz, 1.5V DIMMs**	**Max. MHz, 1.35V DIMMs**	**Max. GB/ Channel**
Unbuffered DIMM	SR or DR	Empty	1333 MHz	1333 MHz	8 GB
	SR	SR			
	DR	DR			
Registered DIMM	SR or DR	Empty	1333 MHz	1333 MHz	16 GB
	SR	SR			
	DR	DR			
	QR	Empty	1333 MHz	1066 MHz	16 GB
	QR	QR	1066 MHz	800 MHz	32 GB

Note 1: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Note 2: Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional.

Possible System Memory Allocation & Availability		
System Device	**Size**	**Physical Memory Available (4 GB Total System Memory)**
Firmware Hub flash memory (System BIOS)	1 MB	3.99 GB
Local APIC	4 KB	3.99 GB
Area Reserved for the chipset	2 MB	3.99 GB
I/O APIC (4 Kbytes)	4 KB	3.99 GB
PCI Enumeration Area 1	256 MB	3.76 GB
PCI Express (256 MB)	256 MB	3.51 GB
PCI Enumeration Area 2 (if needed) -Aligned on 256-M boundary-	512 MB	3.01 GB
VGA Memory	16 MB	2.85 GB
TSEG	1 MB	2.84 GB
Memory available for the OS & other applications		2.84 GB

5-5 PCI Expansion Cards

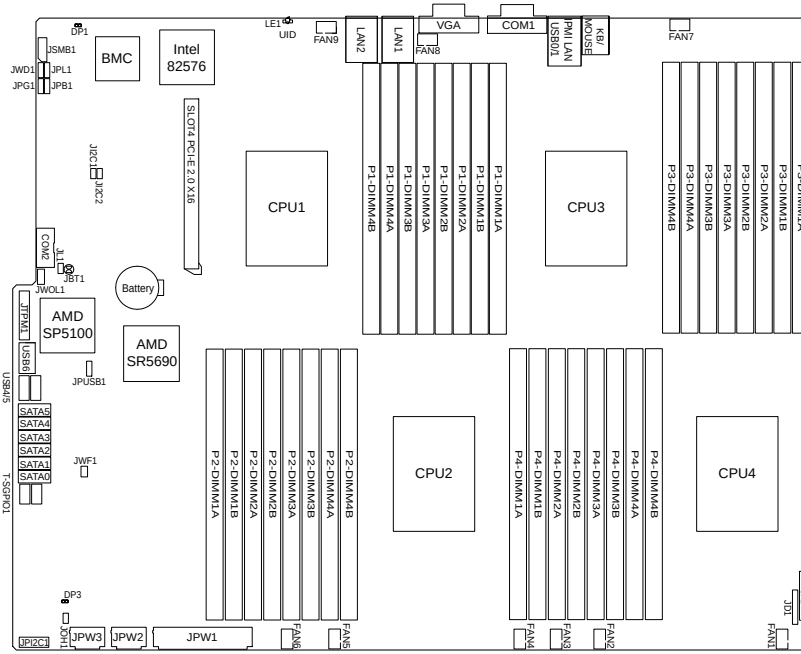
A riser card is used to support one low-profile size PCI expansion card.

Installing a PCI Expansion Card

1. Confirm that you have the correct riser card for your chassis model and the add-on card includes a standard bracket.
2. Remove the chassis cover.
3. Choose the PCI slot shield in which to place the add-on card.
4. In that slot, open the PCI slot shield lever and slide the shield sideways.
5. Slide the add-on card into the riser card and attach the add-on card bracket in place of the PCI slot shield.
6. Secure the add-on card by closing the PCI slot shield lever.
7. Connect cables to the add-on card as necessary.

5-6 Serverboard Details

Figure 5-5. H8QGi+-F Motherboard Layout
(not drawn to scale)



Notes:

Jumpers not indicated are for test purposes only.

H8QGi+-F Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 2-7)
JI^{2}C1/JI^{2}C2	I^{2}C to PCI-E Slot Enable/Disable	Both Closed (Enabled)
JPB1	BMC Enable/Disable	Pins 1-2 (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1	LAN 1/2 Enable/Disable	Pins 1-2 (Enabled)
JPUSB1	USB Wakeup	Pins 1-2 (Enabled)
JWD1	Watch Dog	Pins 1-2 (Reset)

LED	Description
LAN Ports	LEDs for the LAN Ethernet ports
Dedicated IPMI LAN	LEDs for the dedicated IPMI LAN Ethernet port
LE1	LED for UID Button
DP1	LED for IPMI Heartbeat
DP3	LED for Serverboard Power-On

Connector	Description
COM1/COM2	COM1 Serial Port/Header
FAN 1-9	Chassis/CPU Fan Headers
IPMI LAN	Dedicated IPMI LAN Port
JD1	Speaker Header
JF1	Front Panel Connector
JL1	Chassis Intrusion Header
JOH1	Overheat Warning Header
JPI2C1	Power I^{2}C Header
JPW1	24-pin Main ATX Power Connector
JPW2/3	+12V 8-pin CPU Power Connectors
JSMB1	System Management Bus Header (SMBus)
JTPM1	Trusted Platform Module Header
JWF1	Compact Flash Card Power Connector
JWOL1	Wake-On-LAN Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
PS2 Mouse/Keyboard	PS2 Mouse/Keyboard connectors
SATA0 ~ SATA5	SATA Ports
T-SGPIO-1/TSGPIO-2	Serial General Purpose Input/Output Header for SATA
UID	Unit Identifier Button
USB0/1, USB2/3, USB4/5, USB6	Universal Serial Bus (USB) Ports, Headers, and Type-A Ports
VGA	VGA Connector

Note: Jumpers not indicated are for test purposes only.

5-7 Connector Definitions

Power Connectors

A 24-pin main power supply connector(JPW1) and three 8-pin CPU PWR connectors (JPW2/JPW3/JPW4) on the motherboard. These power connectors meet the SSI EPS 12V specification. In addition to the 24-pin ATX power connector, the 12V 8-pin CPU PWR connectors at JPW2/JPW3/JPW4 must also be connected to your power supply. See the table on the right for pin definitions.

Warning: To prevent damage to the power supply or motherboard, please use a power supply that contains a 24-pin and three 8-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the three 8-pin (JPW2 and JPW4) power connectors on the motherboard. Failure in doing so will void the manufacturer warranty on your power supply and motherboard.

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-pin PWR Connector Pin Definitions

Pins	Definition
1 through 4	Ground
5 through 8	+12V

Required Connection

Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be confi gured to function as a suspend button (with a setting in the BIOS - see Chapter 4). To turn off the power when set to suspend mode, press the button for at least 4 seconds. Refer to the table on the right for pin defi nitions.

Power Button Pin Defi nitions (JF1)

Pin#	Definition
1	PWR
2	Ground

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)

Pin#	Definition
5	3.3V
6	PWR Fail LED

Overheat (OH)/Fan Fail/PWR Fail/UID LED

Connect an LED cable to pins 7 and 8 of JF1 to use the Overheat/Fan Fail/Power Fail and UID LED connections. The Red LED on pin 8 provides warnings of an overheat, fan failure or power failure. The Blue LED on pin 7 works as the UID LED indicator for the front panel UID switch located on pins 13~14 of JF1. When Jumper J_UID_OW is set to off (default), the Red LED takes precedence over the Blue LED. (See Page 2-19 for details.) Refer to the table on the right for pin definitions.

OH/Fan Fail/ PWR Fail/Blue_UID LEDPin Defi nitions (JF1)

Pin#	Definition
7	Blue_LED-Cathode(UID)/5.5V.SB
8	OH/Fan Fail/PWR Fail/UID LED (Red)

OH/Fan Fail/PWR Fail LED Status (Red LED)

State	Indication
Off	Normal
On	Overheat
Flashing	Fan Fail

HDD/FP UID Switch

The HDD/UID Switch connections are located on pins 13/14 of JF1. Attach a hard-drive LED cable to display HDD or SATA activities. This connection can also be used as a front panel UID (Unit Identifi er) switch. The UID LED on Pin 7 of JF1 works in conjunction with this UID Switch. When the user presses and releases the UID switch, the UID LED will be turned on or off to indicate the location of the unit. (Refer to Page 2-11 for more details.)

HDD/UID Switch Pin Defi nitions (JF1)

Pin#	Definition
13	UID Signal/3.3V
14	HDD Active

Power LED Connector

The Power LED connector is on pins 15 and 16 of JF1. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)

Pin#	Definition
15	PW_ON
16	Ground

Universal Serial Bus Ports

Two Universal Serial Bus ports (USB 2.0) are located beside the Keyboard and Mouse PS2 ports. One additional Type A port (USB6) is also included on the motherboard. See the table on the right for pin definitions.

Universal Serial Bus Ports Pin Definitions (USB0/1, USB6)

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground

USB Headers

Four USB 2.0 headers (USB2/3 and USB4/5) are also included on the motherboard. These may be connected to provide front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Universal Serial Bus Headers Pin Definitions (USB2/3, USB6/7)

USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	NC

Note: NC indicates no connection.

LAN1/2 (Ethernet Ports)

Two Gigabit Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port. Additionally, there is a dedicated LAN port for IPMI on top of the two rear USB ports. These Ethernet ports accept RJ45 type cables.

Trusted Platform Module Header

This header is used to connect a Trusted Platform Module (TPM), available separately from a third-party vendor. A TPM is a security device that allows encryption and authentication of hard drives, disallowing access if the TPM associated with it is not installed in the system. See the table on the right for pin definitions.

Trusted Platform Module Header Pin Definitions (JTPM1)

Pin#	Definition	Pin#	Definition
1	LCLK		GND
3	LFRAME		No Pin
5	LRESET		VCC5
7	LAD3		LAD2
9	VCC3		LAD1
11	LAD0		GND
13	RSV0		RSV1
15	SB3V		SERIRQ
17	GND		CLKRUN
19	LPCPD		RSV2

Fan Headers

This motherboard has nine fan headers (Fan1 to Fan9). These 4-pin fans headers are backward compatible with 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by the BIOS. See the table on the right for pin definitions

Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

Serial Ports

The COM1 serial port is located beside the VGA port. Refer to the motherboard layout for the location of the COM2 header. See the table on the right for pin definitions.

Serial Port Pin Definitions (COM1/COM2)

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: NC indicates no connection.

SGPIO

The T-SGPIO1/ T-SGPIO2 (Serial General Purpose Input/Output) headers provide a bus between the SATA controller and the backpane to provide SATA enclosure management functions. Connect the appropriate cable from the backplane to the T-SGPIO1 header to utilize SATA management functions on your system.

SGPIO Header Pin Definitions (T-SGPIO1/TSGPIO2)

Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	NC	8	NC

Note: NC indicates no connection.

Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must have a LAN card with a Wake-On-LAN connector and cable to use the Wake-On-LAN feature.

Wake-On-LAN Pin Definitions (JWOL)

Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Compact Flash Card PWR Connector

A Compact Flash Card Power Connector is located at JWF1.

SMBus Header

The header at SMBus is for the System Management Bus. Connect the appropriate cable here to utilize SMB on the system. See the table on the right for pin definitions.

SMBus Header (SMBus) Pin Definitions (JSMB1)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Power I2C

The JPI2C1 header is for power I²C, which may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

Power I²C Pin Definitions (JPI2C)

Pin#	Definition
1	Data
2	Ground
3	Clock
4	NC

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located next to the Back Panel USB Ports 0~3 on the motherboard. See the table at right for pin definitions.

PS/2 Keyboard/Mouse Pin Definitions

PS2 Keyboard		PS2 Mouse	
Pin#	Definition	Pin#	Definition
1	KB Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	Mouse/KB VCC (+5V)	4	Mouse/KB VCC (+5V)
5	KB Clock	5	Mouse Clock
6	No Connection	6	No Connection
VCC: with 1.5A PTC (current limit)			

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Battery voltage
2	Intrusion signal

Overheat LED

Connect an LED to the JOH1 header to provide warning of chassis overheating. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)

Pin#	Definition
1	3.3V
2	OH Active

Power LED/Speaker

On the JD1 header, pins 1~3 are used for power LED indication, and pins 4-7 are for the speaker. See the tables on the right for pin definitions. If you wish to use the onboard speaker, you should close pins 6~7 with a jumper. Connect a cable to pins 4~7 of JD1 to use an external speaker.

PWR LED Connector Pin Definitions

Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

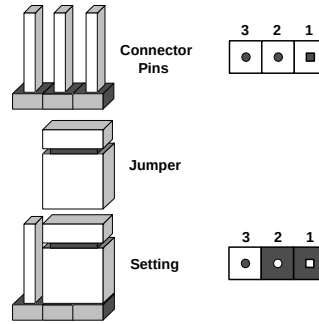
Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 4~7	External Speaker
Pins 6~7	Internal Speaker

Video Connector

A Video (VGA) connector is located below the COM Port on the IO backplane. This connector is used to provide video and CRT display.

5-8 Jumper Settings



Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

JBT1 contact pads

CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS.*

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

I2C to PCI-Express Slot

JI²C1/JI²C2 allows you to enable the I²C bus to communicate with the PCI-Express slot. For the jumpers to work properly, please set both jumpers to the same setting. If enabled, both jumpers must be enabled. If disabled, both jumpers must be disabled. See the table on the right for jumper settings.

I²C to PCI-Express Slot Jumper Settings (JI²C1/JI²C2)

Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Watch Dog Enable/Disable

JWD1 enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD1)

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: When Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

LAN1/2 Enable/Disable

Change the setting of jumper JPL1 to enable to enable or disable the LAN1 and LAN2 Ethernets ports. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 En/Disable Jumper Settings (JPL1)

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

USB Wake-Up

JPUSB1 jumper allows you to "wake up" the system by pressing a key on the USB keyboard or by clicking the USB mouse of your system. These jumpers are used in conjunction with the USB Wake-Up function in the BIOS. See the table on the right for jumper settings and jumper connections. (the default is Enabled)

Backpanel USB Wake-Up Enable (JPUSB1) Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

BMC Jumper

JPB1 is used to enable or disable theBMC (Baseboard Management Control) Chip and the onboard IPMI connection.This jumper is used together with the IPMI settings in the BIOS. The default position is on pins 1 and 2 to Enable BMC. See the table on the right for jumper settings.

BMC Jumper Enable (JPB1) Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled (default)
Pins 2-3	Disabled

5-9 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, one LED blinks to indicate activity while the other may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)

LED Color	Definition
Off	10 MHz
Green	100 MHz
Amber	1 GHz

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the H8QG6/i+-F serverboard. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)

Color	Status	Definition
Link (Left)	Green: Solid	100 Mb/s
Activity (Right)	Amber: Blinking	Active

Power LED

DP3 is an Onboard Power LED. When this LED is lit, it means power is present on the serverboard. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

Power LED (DP3)

State	System Status
On	Standby power present on motherboard
Off	No power connected

UID LED (LE1)

A rear UID LED Indicator, located at LE1, works in conjunction with the rear UID switch to provide easy identification for a unit that might be in need of service. Refer to Page 2-13 for further UID details.

IPMI LED

The serverboard contains an IPMI LED (DP1) located near the corner above the PCI-X slots. When this LED is lit, it means a connection is active for the built-in IPMI on the serverboard.

IPMI LED (DP1)

State	System Status
On	Active connection
Off	No connection

5-10 SAS and SATA Drive Connections

SATA Ports

There are no jumpers to configure the SATA ports, which are designated SATA0 through SATA5. See the table on the right for pin definitions.

SATA Ports Pin Definitions (SATA0-SATA5)

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-11 Enabling SATA RAID

Now that the hardware is set up, you must install the operating system and the SATA RAID drivers, if you wish to use RAID with your SATA drives. The installation procedure differs depending on whether you wish to have the operating system installed on a RAID array or on a separate non-RAID drive. See the instructions below for details.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that employs a single cable with a minimum of four wires to create a point-to-point connection between devices. This connection is a serial link that supports a SATA transfer rate from 150 MBps. The serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA) and can extend up to one meter in length, compared to only 40 cm for PATA cables. Overall, SATA provides better functionality than PATA.

Installing the OS/SATA Driver

Before installing the OS (operating system) and SATA RAID driver, you must decide if you wish to have the operating system installed as part of a bootable RAID array or installed to a separate non-RAID hard drive. If on a separate drive, you may install the driver either during or after the OS installation. If you wish to have the OS on a SATA RAID array, you must follow the procedure below and install the driver during the OS installation.

Building a Driver Diskette

You must first build a driver diskette from the Supermicro CD-ROM that was included with the system. (You will have to create this disk on a computer that is already running and with the OS installed.)

Building a Driver Diskette

1. Insert the CD into your CD-ROM drive and start the system. A display as shown in Figure 2-6 will appear.

2. Click on the icon labeled "Build Driver Diskettes and Manuals" and follow the instructions to create a floppy disk with the driver on it.

3. Once it's been created, remove the floppy and insert the installation CD for the Windows Operating System you wish to install into the CD-ROM drive of the new system you are about to configure.

Note: You need to have an external USB floppy when building the driver diskette. Window's Vista, Windows 2008 or later Windows OS systems can use a USB stick instead of a floppy.

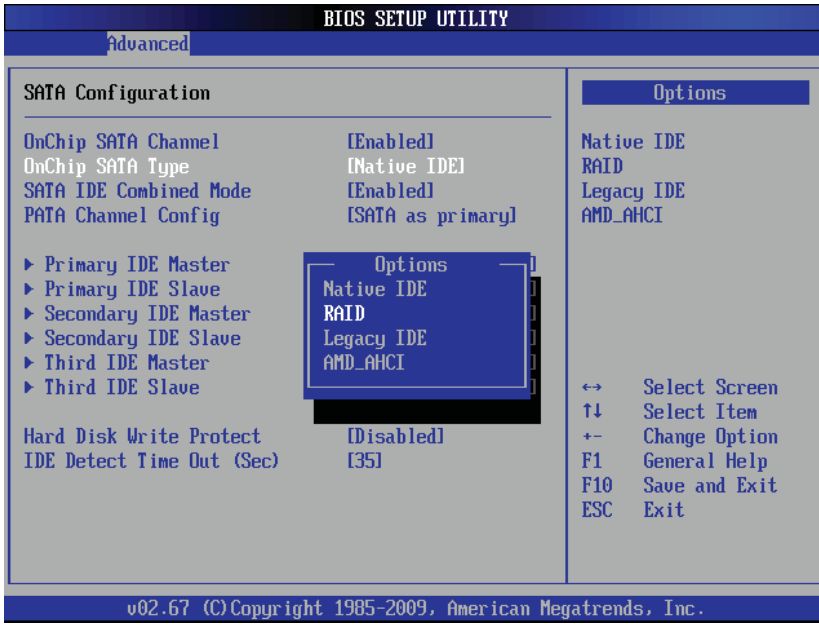
Enabling SATA RAID in the BIOS

Before installing the Windows Operating System, you must change some settings in BIOS. Boot up the system and hit the <Del> key to enter the BIOS Setup Utlility. After the Setup Utility loads,

1. Use the arrow keys to move to the Exit menu. Scroll down with the arrow keys to the "Load Optimal Defaults setting and press <Enter>. Select "OK" to confirm, then <Enter> to load the default settings.

2. Use the arrow keys to move to the "Advanced" menu, then scroll down to "IDE/SATA Configuration" and press the <Enter> key. Once in this submenu, scroll down to "OnChip SATA Type" and choose the "RAID" option (see Figure 2-4).

Figure 5-6. BIOS Setup Screen



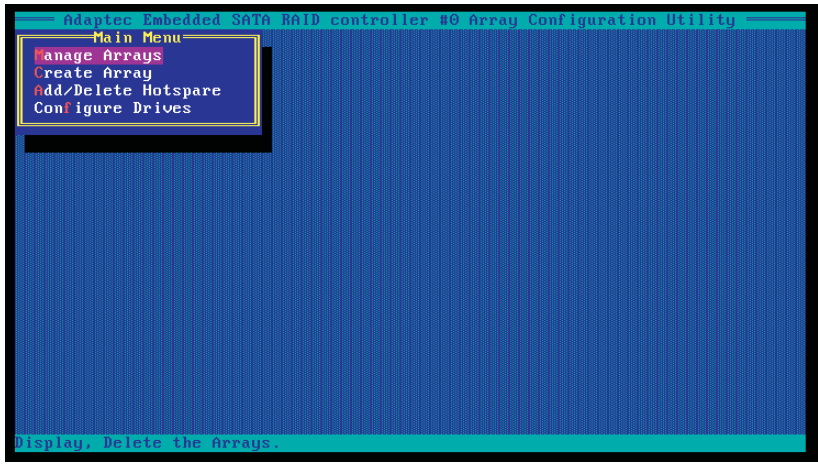
3. Hit the <Esc> key twice and scroll to the Exit menu. Select "Save Changes and Exit" and hit <enter>, then hit <Enter> again to verify.

4. After exiting the BIOS Setup Utility, the system will reboot. When prompted during the startup, press the <CTRL+A> key when prompted to run the Dot-Hill RAID Utility program (see Figure 2-5).

Using the Adaptec RAID Utility

The Adaptec® RAID Utility program is where you can define the drives you want to include in the RAID array and the mode and type of RAID.

Figure 5-7.Adaptec RAID Utility Program Screen



Installing the RAID Driver During OS Installation

You may also use the procedure below to install the RAID driver during the Window's OS installation:

1. With the Windows OS installation CD in the CD-ROM drive, restart the system.

2. When you see the prompt, hit the <F6> key to enter Windows setup.

3. Eventually a blue screen will appear with a message that begins "Windows could not determine the type of one or more storage devices . . ." When you see the screen, hit the <S> key to "Specify Additional Device", then insert the driver diskette you just created into the floppy drive.

4. Highlight "Manufuacturer Supplied Hardware Support Disk" and hit the <Enter> key.

5. Highlight the first "Adaptec RAID" driver shown and press the <Enter> key to install it.

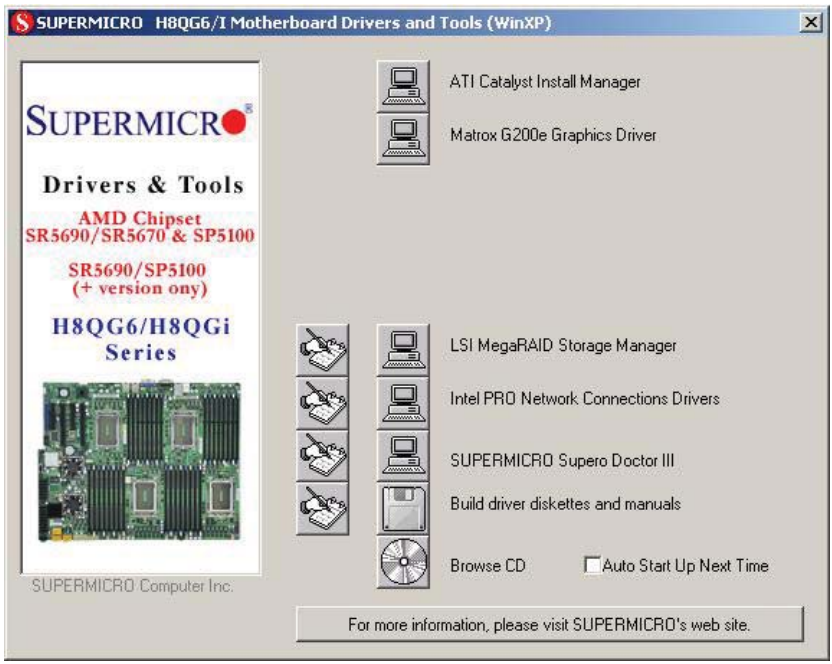
6. Press <Enter> again to continue with the Windows setup.

5-12 Installing Drivers

The CD that came bundled with the system contains drivers, some of which must be installed, such as the chipset driver. After inserting this CD into your CD-ROM drive, the display shown in Figure 2-6 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you should reboot the system before moving on to the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Figure 5-8. Driver/Tool Installation Display Screen



Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-9. Supero Doctor III Interface Display Screen (Health Information)

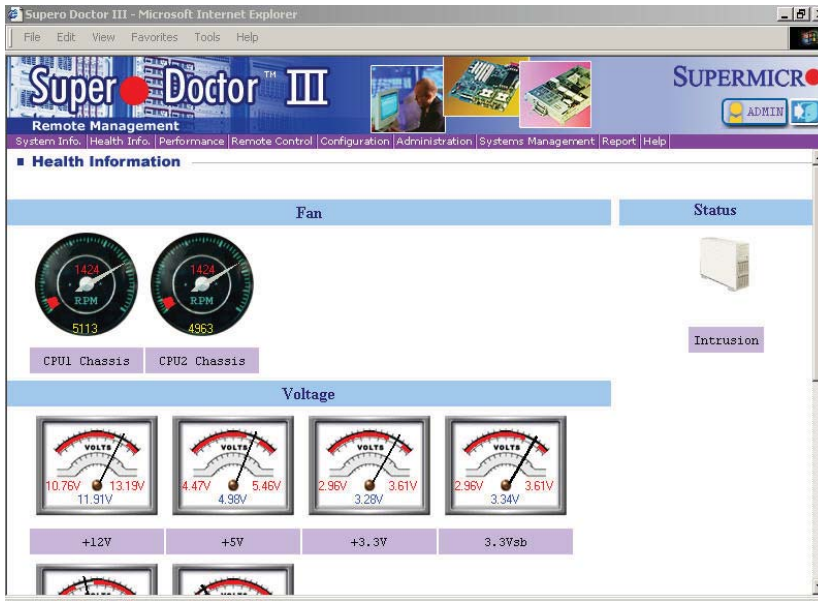


Figure 5-10. Supero Doctor III Interface Display Screen (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: Super Doctor III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the Super Doctor III User's Guide at: http://www.supermicro.com/manuals/other/SDIII_User_Guide.pdf. For Linux, we recommend that you use the Supero Doctor II applictation instead.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC818TS chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the next step.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

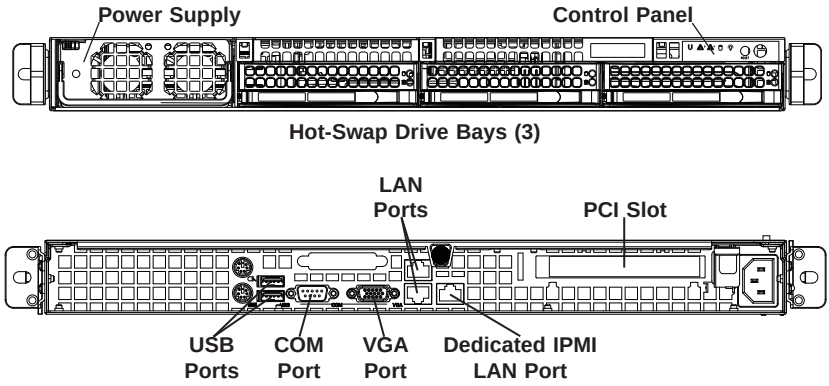
Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully.

The following measures are generally sufficient to protect your equipment from ESD damage.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Figure 6-1. Chassis: Front and Rear Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the appropriate header on the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path.

The control panel LEDs inform you of system status. See "Chapter 3: System Interface" for details on the LEDs and the control panel buttons. Details on JF1 can be found in "Chapter 5: Advanced Serverboard Installation."

6-3 System Cooling

Four 4-cm counter-rotating fans provide the cooling for the system. Each fan unit is actually made up of two fans joined back-to-back, which rotate in opposite directions. This counter-rotating action generates exceptional airflow and works to dampen vibration levels.

It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2 for details.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

Replacing a System Fan (Figure 6-2)

1. If the BIOS is not being utilized to determine which fan has failed, open the top cover of the chassis while the system is running to locate the position of the failed fan. Never run the server for an extended period of time with the top cover open.

2. Turn off the power to the system and unplug the AC power cord.

3. Remove the failed fan's wiring from the backplane.

4. Remove the four pins securing the fan to the fan tray.

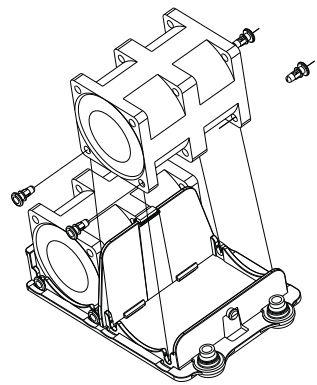
5. Lift the failed fan from the fan tray and out of the chassis.

6. Place the new fan into the vacant space in the fan tray, while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans in the same fan tray.

7. Reconnect the fan wires to the exact same chassis fan headers as the previous fan.

8. Reconnect the AC power cord, power up the system and check that the fan is working properly before replacing the chassis cover.

Figure 6-2. Removing a Fan from the Fan Tray



6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

Hard Drives: Because of their hotswap capability, you do not need to access the inside of the chassis or power down the system to install or replace hard drives. Proceed to the next section for instructions.

Peripheral Drives: The SC818TS chassis includes space for a variety of peripheral drive options, including a 2.5" hard disk drive, DVD-ROM or floppy drive. For a complete listing of peripheral drive options, visit the Supermicro web site at:

http://www.supermicro.com/products/chassis/1U/818/SC818TS-1400.cfm

Hard Drive Installation

The hard drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays. For this reason, even empty carriers without drives installed must remain in the chassis.

Removing Hard Drive Carriers from the Chassis

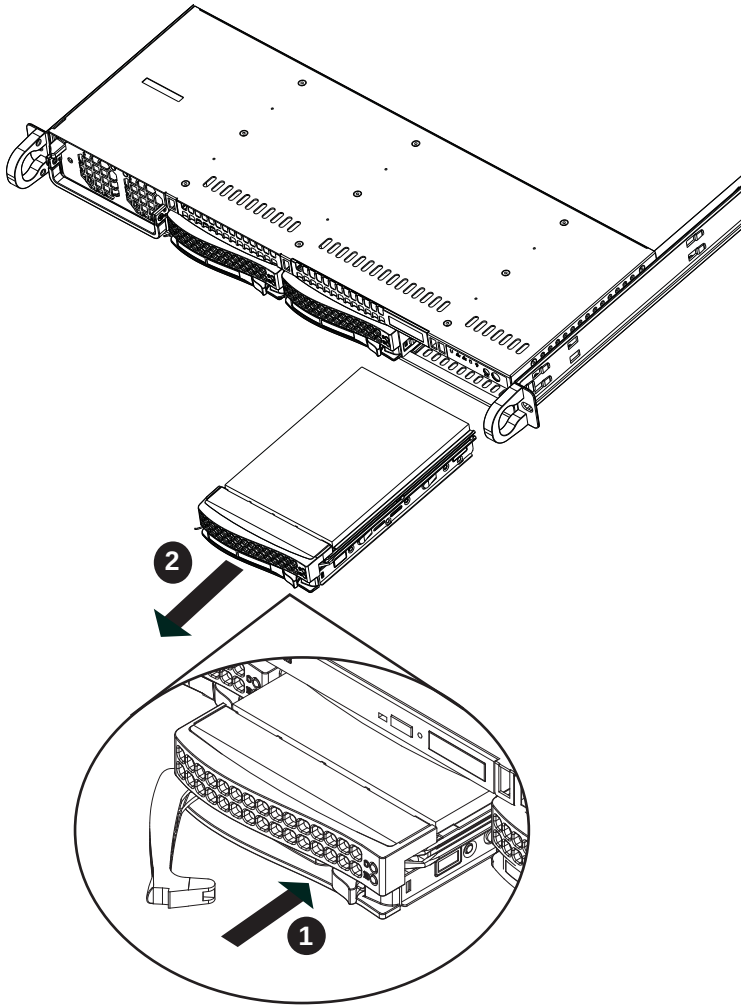
1. Press the release button on the drive carrier. This extends the drive carrier handle.

2. Use the handle to pull the drive carrier out of the chassis.

Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drive carriers removed.

Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm.

Figure 6-3. Removing a Hard Drive Carrier



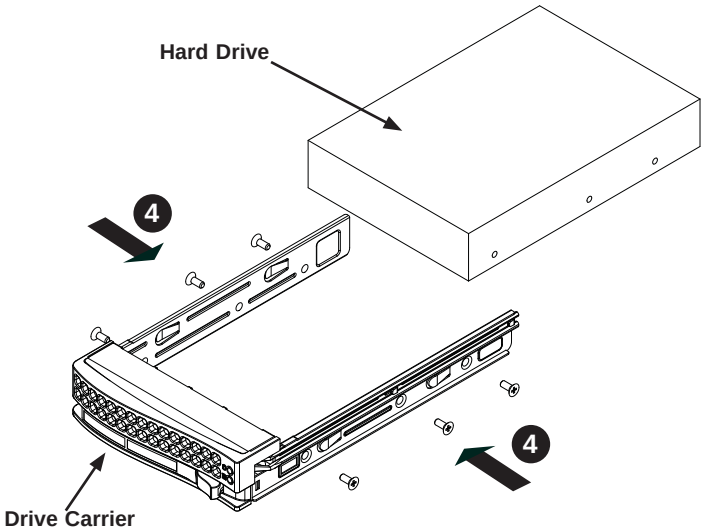
Installing a Hard Drive to the Hard Drive Carrier

1. Remove the two screws securing the dummy drive to the carrier.
2. Remove the dummy drive from the carrier.
3. Install a new drive into the carrier with the printed circuit board side facing downward so that the mounting holes align with those in the carrier.
4. Secure the hard drive by tightening all six screws.

Installing a Hard Drive Carrier Into the Chassis

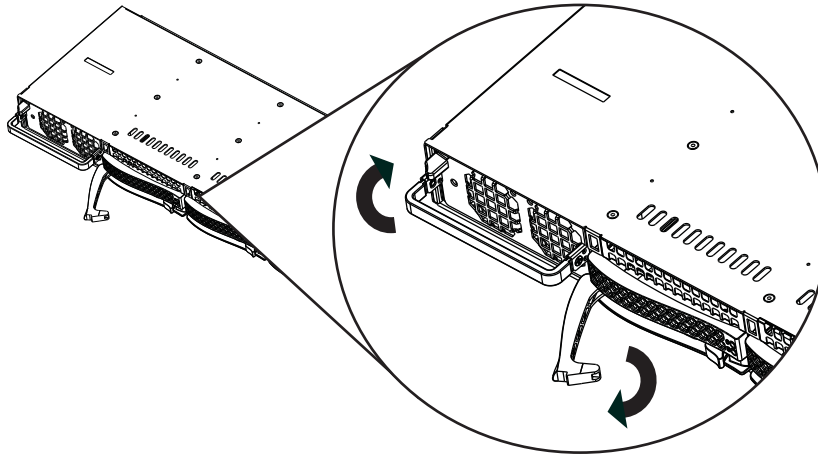
1. Insert the loaded hard drive carrier into the drive bay of the chassis
2. Push the drive carrier into the drive bay, pushing in the handle of the carrier until it clicks into the locked position.

Figure 6-4. Installing a Hard Drive to the Carrier



Note: When installing the hard drive carrier that is next to the power supply, the power supply handle must be lifted before extending the hard drive carrier handle, or before inserting the hard drive carrier into the drive bay.

Figure 6-5. Installing/Removing the Carrier Next to the Power Supply



Peripheral Drive Installation

Installing or Replacing a Peripheral Drive

1. Unplug the main power cord to the chassis.

2. Unplug the power and data cables from the motherboard and/or backplane.

3. If you are adding a new drive, first remove the dummy tray from the drive bay The mini-bezel can be removed by pulling out the hard drive beneath the drive bay, then pulling the mini-bezel forward.

   If you are replacing a drive: Locate the locking tab at the rear (left hand side when viewed from the front) of the peripheral drive. Push the tab toward the drive and push the drive unit out the front of the chassis.

4. Insert the new drive unit in the slot until the tab locks in place.

5. Reconnect the data and power cables.

6. Replace the chassis cover (replace the server in the rack, if necessary) and power up the system.

6-5 Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The air shroud for the SC818TS chassis does not require screws to set up.

Installing the Air Shroud

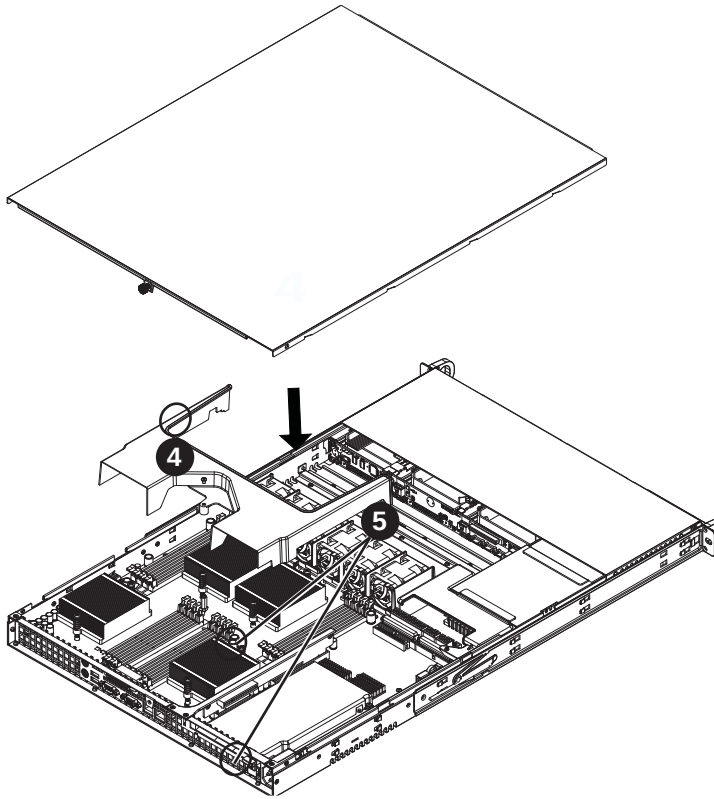
1. Position the air shroud in the chassis as illustrated above.
2. Align the notch (A) on the air shroud with the pin (B) on the add-on card bracket.
3. Slide the pin (B) into the back of the notch (A)
4. Lower the front of the air shroud over the fan tray, sliding the front notches (C) over the pins on the fan tray (D).

Checking the Air Flow

Checking the Server's Air Flow

1. Make sure there are no wires or other objects obstructing the airflow in and out of the server. Pull all excess cabling out of the airflow path.
2. Do not operate the server without all drive carriers installed in the drive bays. Use only recommended server parts.
3. The control panel LEDs inform you of the overall system status. See “Chapter 3 System Interface” for details on the LEDs and the control panel buttons.

Figure 6-6. Installing the Air Shroud



6-6 Power Supply

The system includes a single 1400 watt power supply, which is auto-switching capable. Power must be removed from the system when replacing the power supply.

Power Supply Failure

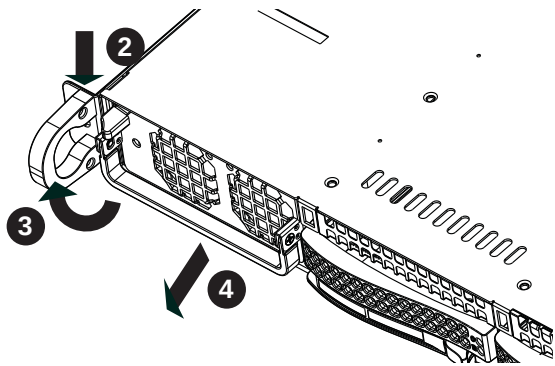
If the power supply module fails, the system will shut down and you will need to replace the module. Replacements can be ordered directly from Supermicro (see contact information in the Preface).

As there is only one power supply module in the system, power must be completely removed from the server before removing and replacing the power supply for whatever reason.

Removing/Replacing the Power Supply (Figure 6-6)

1. Power down the server and unplug the AC power cord.
2. Push the release tab on the front of the power supply.
3. Pull the power supply out using the attached handle.
4. Replace the failed power module with the same model (See Appendix C).
5. Push the new power supply module into the power bay until you hear a click.
6. Reconnect the AC power cord and depress the power button on the control panel to restart the system.

Figure 6-7. Removing/Replacing the Power Supply



Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the H8QGi+-F serverboard. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our web site for any changes to BIOS that may not be reflected in this manual.

Starting the Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ▶" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

7-2 Main Menu

When you first enter AMI BIOS Setup Utility, you will see the Main Menu screen. You can always return to the Main Menu by selecting the ***Main*** tab on the top of the screen with the arrow keys.

The Main Menu screen provides you with a system overview, which includes the version, built date and ID of the AMIBIOS, the type, speed and number of the processors in the system and the amount of memory installed in the system.

System Time/System Date

You can edit this field to change the system time and date. Highlight *System Time* or *System Date* using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in DAY/MM/DD/YYYY format. The time is entered in HH:MM:SS format. Please note that time is in a 24-hour format. For example, 5:30 A.M. appears as 05:30:00 and 5:30 P.M. as 17:30:00.

7-3 Advanced Settings Menu

▶ Boot Features

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for the system to boot up. The options are **Enabled** and Disabled.

Quiet Boot

If Disabled, normal POST messages will be displayed on boot-up. If **Enabled**, this display the OEM logo instead of POST messages.

Add On ROM Display Mode

This option sets the display mode for Option ROM. The options are **Force BIOS** or Keep Current.

Bootup Num Lock

This option selects the power-on state for the NUM lock to either **On** or Off.

Wait for F1 if Error

This setting controls the system response when an error is detected during the boot sequence. When enabled, BIOS will stop the boot sequence when an error is detected, at which point you will need to press the F1 button to re-enter the BIOS setup menu. The options are **Enabled** and Disabled.

Hit 'DEL' Message Display

Use this option to **Enable** or Disable the "Press DEL to run setup" message in POST.

Interrupt 19 Capture

Select Enabled to allow ROMs to trap Interrupt 19. The options are **Enabled** and Disabled.

Restore on AC Power Loss

This sets the action that occurs when an AC power loss occurs. Options include Power Off, Power On and **Last State**.

Watch Dog Timer

This sets the Watch Dog Timer. Options include Enabled or **Disabled**.

▶ Processor & Clock Options

CPU Configuration

This displays static information on the Module Version, AGESA Version, Physical Count and Logical Count for the system's processor(s) and clock.

CPU Information

This setting is used to select which physical CPU's information to display. Options include **Processor 0** or Processor 1. The information for the selected processor includes Processor number, Revision, Cache L1/L2/L3, Speed, NB CLK, Able to Change Frequency and uCode Patch Level.

Note: Zero is always the "Boot Strap Processor" or main CPU with all others being "Application Processors".

GART Error Reporting

This option should remain disabled for normal operation. The driver developer may enable this option for testing purposes. Options are Enabled or **Disabled**.

Microcode Update

This setting **Enables** or Disables microcode updating.

Power Now

This setting is used to **Enable** or Disable the AMD Power Now feature.

ACPI SRAT Table

This option **Enables** or Disables the building of the ACPI SRAT Table.

CPU DownCore Mode

This option sets the CPU DownCore Mode for your system. If you change this option then a cold reset is required. Options include **Auto Mode**, Maximum Core Level, No Leveling, 2 Cores, 4 Cores, 6 Cores, 8 Cores, 10 Cores and 12 Cores.

C1E Support

This option enables or **disables** C1E Support for your system.

▶ Advanced Chipset Control

Chipset Information

Chipset Information is displayed at the top of this menu on the chipset CIMx version used.

▶ NorthBridge Chipset Configuration

▶ Memory Configuration

Bank Interleaving

This option allows you to enable Bank Interleaving in the system. Options include **Auto** and Disabled.

Node Interleaving

This option allows you to enable Node Interleaving in the system. Options include Auto and **Disabled**.

Channel Interleaving

This option allows you to enable Channel Interleaving in the system. The options are **Auto** and Disabled.

CS Sparing Enable

This option will reserve a spare memory rank in each node when enabled. Options are Enable and **Disable**.

Bank Swizzle Mode

This sets the Bank Swizzle Mode to either **Enabled** or Disabled.

▶ ECC Configuration

ECC Mode

This submenu sets the level of ECC protection. Options include Disabled, **Basic**, Good, Super, Max and User. Selecting User activates the other option for user setting.

Note: The "Super" ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8-hours.

DRAM ECC Enable

This setting allows hardware to report and correct memory errors automatically, maintaining system integrity. Options are **Enabled** or Disabled.

▶ DRAM Timing Configuration

DRAM Timing Config

This setting specifies the DRAM timing configuration. Options are **Auto** and Manual.

Memory Timing Parameters

This selects the which node's timing parameters to display. The only selection for this option is **CPU Node 0**.

Clock Speed Information

Clock speed information for memory is also displayed under this Northbridge Chipset Confirguration page.

IOMMU

This setting is used to disable or set the GART size in systems without AGP. Options include Enabled and **Disabled**.

OHCI/EHCI HC Device Functions

These settings allow you to either **Enable** or Disable functions for OHCI or EHCI bus devices.

USB 2.0 Controller Mode

Use this setting to configure the USB 2.0 Controller in either **Hi-Speed** (480 Mps) or Full Speed (12 Mps) mode.

Legacy USB Support

Select "Enabled" to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. "Auto" disabled Legacy support if no USB devices are connected. The options are Disabled, **Enabled** and Auto.

▶ IDE/SATA Configuration

On Chip SATA Channel

This setting allows you to **Enable** or Disable the OnChip SATA channel.

On Chip SATA Type

Use this setting to set the On Chip SATA type. Options include **Native IDE**, RAID, AHCI and Legacy IDE.

SATA IDE Combined Mode

This setting allows you to **Enable** or Disable the SATA IDE combined mode.

PATA Channel Configuration

This allows you to set PATA channel configuration. Options include **SATA as Primary** or SATA as secondary.

▶ Primary/Secondary/Third IDE Master/Slave

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allows the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode.

Use this value if the IDE disk drive support cannot be determined. Select 0 to allow BIOS to use PIO mode 0, which has a data transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

DMA Mode

Selects the DMA Mode. Options are **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0. MDWDMA1, MWDMA2, UDMA0. UDMA1, UDMA2, UDMA3, UDMA4 and UDMA5. (SWDMA=Single Word DMA, MWDMA=Multi Word DMA, UDMA=UltraDMA.)

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow BIOS to auto detect hard disk drive support. Select "Disabled" to prevent AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32-Bit Data Transfer

Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are **Enabled** and Disabled.

Hard Disk Write Protect

Use this setting to Enable or **Disable** hard disk write protection for your system. This is effective only if the device is accessed through the BIOS.

IDE Detect Timeout (Sec)

Use the +/- keys to adjust and select the time out for detecting ATA/ATAPI devices. The default value is **35**.

▶ PCI/PNP Configuration

Clear NVRAM

Select Yes to clear NVRAM during boot-up. The options are Yes and **No**.

Plug & Play O/S

Select Yes to allow the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow AMIBIOS to configure all devices in the system.

PCI Latency Timer

This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE Busmaster

Use this setting to **Enable** or Disable BIOS enabled uses of PCI Busmastering for reading or writing to IDE drives.

Slot 1 ~ Slot 4 PCI-E OPROM

These four settings (Slot 1 through Slot 4) allow you to **enable** or disable the numbered slot's Op ROM, except for the VGA card.

UIO PCI-E OPROM

This setting allows you to **enable** or diable the UIO slot Op ROM, except for the VGA card.

Onboard NIC Option ROM Select

This setting allows you to disable or select the onboard NIC option ROM. Options include **Disabled**, PXE and iSCSI.

▶ SuperI/O Configuration

Serial 1 Address

This option specifies the base I/O port address and Interrupt Request address of serial port 1. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to *Disabled*, the serial port physically becomes unavailable. Select "3F8/IRQ4" to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. Options include Disabled, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3

Serial 2 Address

This option specifies the base I/O port address and Interrupt Request address of serial port 2. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "2F8/IRQ3" to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. Options include Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2F8/IRQ3.

▶ Remote Access Configuration

Remote Access

Use this option to **Enable** or Disable Remote Access in your system. If enabled, the settings below will appear.

Serial Port Number

Use this setting to select the serial port for console redirection. Options include COM1, COM2 or **COM3**. The displayed base address and IRQ for the serial port changes to reflect the selection you make.

Note: Make sure the selected port is enabled.

Serial Port Mode

Selects the serial port settings to use. Options are **(115200 8, n, 1)**, (57600 8, n, 1), (38400 8, n, 1), (19200 8, n, 1) and (09600 8, n, 1).

Flow Control

Selects the flow control to be used for console redirection. Options are **None,** Hardware and Software.

Redirection After BIOS POST

Options are Disable (no redirection after BIOS POST), Boot Loader (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.

Terminal Type

Selects the type of the target terminal. Options are **ANSI**, VT100 and VT-UTF8.

VT-UTF8 Combo Key Support

Allows you to **Enable** or Disable VT-UTF8 combination key support for ANSI/ VT100 terminals.

Sredir Memory Display Delay

Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 sec, 2 secs and 4 secs.

▶ Hardware Health Configuration

CPU Overheat Temperature

This setting allows you to specify the type of alarm for CPU overheating. Options include The Early Alarm and **The Default Alarm**.

Other items in the submenu are systems monitor displays for the following information:

CPU1 Temperature, CPU2 Temperature, CPU3 Temperature, CPU4 Temperature, System Temperature, Fan 1-9 Reading, Chipset FAN1-2, CPU1 VCore, CPU2 VCore, CPU3 VCore, CPU4 VCore, 3.3V Vcc (V), + 5Vin, +12V Vcc (V), CPU1~4 DIMM Voltage, Chipset SR56x0 Voltage, 3.3V standby, Battery Voltage

▶ System Fan Monitor

This submenu contains lists the system fans and contains RPM information for them.

Fan Speed Control Modes

This submenu allows you to determine how the system will control the speed of the onboard fans. The options are Full Speed/FS (Max Cooling), Performance/PF (Better Cooling), **Balanced/BL** (Balance between performance and energy saving), Energy Saving/ES (Lower Power and Noise).

A display also showing the speeds of FAN1 Speed ~ FAN11 Speed is shown on this page.

▶ ACPI Configuration

ACPI Aware O/S

Use this setting to enable or disable ACPI support for the operating system if it supports ACPI. Options include **Yes** (enable ACPI support) or No (disable ACPI support).

ACPI Version Features

Use this setting the determine which ACPI version to use. Options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0.

ACPI APIC Support

Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are **Enabled** and Disabled.

Headless Mode

Use this setting to enable or **disable** headless operation mode through ACPI.

WHEA Support

Use this setting to **enable** or disable Windows Hardware Error Architecture.

▶ IPMI Configuration

This menu shows static information about the IPMI firmware revision and status of the BMC, as well as options for IPMI configuration.

▶ View BMC System Event Log

Pressing the Enter key will open the following settings. Use the "+" and "-" keys to navigate through the system event log.

Clear BMC System Event Log

Selecting this and pressing the Enter key will clear the BMC system event log.

▶ Set LAN Configuration

Use the "+" and "-" keys to choose the desired channel number. This displays Channel Number and Channel Number Status information.

▶ IP Address

This submenu sets the IP address source as either Static or **DHCP**. Selecting Static allows you to manually set the IP Address, Subnet Mask and Gateway Address.

In the field provided here enter the IP address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only The IP address and current IP address in the BMC are shown.

▶ MAC Address

In the field provided here enter the MAC address in the hex form of xx.xx. xx.xx.xx.xx with xx in hex form only. The current MAC address in the BMC is shown.

▶ Subnet Mask

In the field provided here enter the Subnet address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current subnet address in the BMC is shown.

▶ Gateway Address

In the field provided here enter the Gateway address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only. The current Gateway address in the BMC is shown.

▶ Event Log Configuration

View Event Log

Pressing the Enter key will open the event log. Use the "↑" and "↓" keys to navigate through the system event log.

Mark All Events as Read

Selecting this and pressing the Enter key marks all events as read in the event log.

Clear Event Log

Selecting this and pressing the Enter key clears the system event log.

SR56x0 (RD890S) PCIE Error Log

This setting allows you set an error log ofr PCIE errors. Options include Yes or **No**.

7-4 Security Settings Menu

AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

Change Supervisor Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Change User Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When "Enabled", AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Settings Menu

▶ Boot Device Priority

This feature allows you to prioritize the boot sequence from the list of available devices. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Removable Drives

This feature allows you to specify the boot sequence from the list of available removable drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Hard Disk Drives

This feature allows you to specify the boot sequence from the list of available hard disk drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ CD/DVD Drives

This feature allows you to specify the boot sequence from the list of available CD/DVD drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ USB Drives

This feature allows you to specify the boot sequence from the list of available USB drives. A device that is in parenthesis has been disabled in the corresponding type menu.

▶ Network Drives

This feature allows you to specify the boot sequence from the list of available network drives. A device that is in parenthesis has been disabled in the corresponding type menu.

Retry Boot Device

This setting allows you to enable or **disable** auto retry of all boot devices.

7-6 Exit Menu

Select the Exit tab from AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then Select "OK" to allow BIOS to automatically load the Optimal Defaults as the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not maximum performance.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list (on the following page) correspond to the number of beeps for the corresponding error. All errors listed, with the exception of Beep Code 8, are fatal errors.

A-1 AMIBIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
1 long, 8 short	Video error	Video adapter disabled or missing

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our web site at www.supermicro.com/support/manuals.

B-1 Installing the Windows OS for a RAID System

1. Insert Microsoft's Windows XP/2003/2008/Vista Setup CD in the CD driver and the system will start booting up from CD.

2. Press the <F6> key when the message "Press F6 if you need to install a third party RAID driver" displays.

3. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver diskette "ITE RAID Windows XP/2003/2008/Vista Driver for IDE" into the floppy drive and press the <Enter> key.

5. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

6. Insert the driver diskette into the drive and press the <Enter> key.

7. Choose the LSI SAS RAID driver indicated in the Windows OS Setup screen, and press the <Enter> key.

8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

9. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then, continue the Windows OS installation.

10. After the Windows OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows OS for a Non-RAID System

1. Insert Microsoft's Windows OS Setup CD in the CD-ROM drive and the system will start booting up from the CD.

2. Continue with the installation. The Windows OS Setup screen will display.

3. From the Windows OS Setup screen, press the <Enter> key. The OS Setup will automatically load all device files and then continue with the Windows installation.

4. After the installation has completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your system into the CD-ROM drive during system boot and the main screen will display.

Appendix C

System Specifications

Processors

Quad AMD Opteron 6100 series (Socket G34 type) processors

Note: please refer to our website for details on supported processors.

Chipset

One AMD SR5690 chipset and one SP5100 Southbridge chipset

BIOS

16 Mb AMIBIOS SPI Flash ROM

Memory Capacity

Thirty-Two (32) single/dual/tri/quad channel DIMM slots supporting up to 512 GB of DDR3-1333/1066/800 registered ECC or 128GB of DDR3 Unbuffered ECC/ non-ECC SDRAM

Note: interleaved memory requires DIMMs to be installed in pairs - refer to Section 5-6 for details.

SATA Controller

AMD SR5690 on-chip controller to support six 3 Gb/s Serial ATA (RAID 0, 1, 10 supported)

Drive Bays

Three hot-swap drive bays to house standard SATA drives

Peripheral Drive Bays

One (1) slim DVD-ROM drive

Expansion Slots

One low-profile PCI Express x16 slot (with pre-installed riser cards)

Serverboard

H8QGi+-F (Proprietary form factor)
Dimensions: 16.48" x 13" (418 x 330 mm)

Chassis

SC818TS-1400LPBP (1U rackmount)
Dimensions: (WxHxD) 17.2 x 1.7 x 28.2 in. (437 x 43 x 716 mm)

Weight

Gross (Bare Bone): 43 lbs. (19.5 kg.)

System Cooling

Four sets of 4-cm counter-rotating cooling fans (fan speed controlled by BIOS setting)

System Input Requirements

AC Input Voltage: 180-240 VAC
Rated Input Current: 7.2A (180V) to 9.5 (240V)
Rated Input Frequency: 50-60 Hz
Efficiency: 80+ (Gold Level)

Power Supply

Rated Output Power: 1400W w/PMBus (Part# PWS-1K41F-1R)
Rated Output Voltages: +12V (116A), +5Vsb (6A)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 20% to 95% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

(continued from front)

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